

MONOGRAPH OF HIMALAYAN, ASSAMESE, BARMESE AND CINGALESE CLAU-
SILIA,—by WILLIAM T. BLANFORD, F. G. S., C. M. Z. S., &c.

(With Plate IX.)

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Not a single species of *Clausilia* has hitherto been found in India proper, South of the Himalayas, not even in the semi-Malay fauna of the Malabar coast, although one kind occurs in Ceylon.* The few forms hitherto described from the territories belonging to the British Indian Empire are from the mountains to the north, or from the countries to the eastward. Several of those described are rare and local, and some are from places very difficult of access.

By the kindness of my friends, Major Godwin-Austen, Mr. Theobald, Dr. Stoliczka, and Mr. G. Nevill, I have been furnished with specimens of all the species not in my own collection, hitherto described from British Barma, Assam, the Himalayas and Ceylon, except *Clausilia vespa*, Gould, *C. insignis*, Gould, and *C. bulbosus*, Benson. I have copied authentic figures of the last two, and I add a representation of a shell from Moulmein which may possibly be a variety of *C. vespa*.

I am unable, without access to a greater number of types, to assign all the Himalayan and Barmese *Clausilia* to the proper sub-genera. Those to which the known species hitherto been referred do not always appear to me to include them. Thus *C. insignis*, Gould, *C. Philippiana*, Pfr., and *C. cylindrica*, Gray, have all been classed in *Phædusa*, to which I am inclined to doubt if any except the first really belong. I have classed the species in natural sections, and I have given the most conspicuous characters of each group; and in one case only I have proposed a new sectional or sub-generic name.

SECTION I.—Shell horny, smooth, elongate; the apical portion deciduous; lunule rudimentary or wanting, palatal plieæ few, the uppermost elongate.

1.† CLAUSILIA CYLINDRICA, Gray.

Pfeiffer, Symbol. III, p. 93. Mon. Hell. II, p. 428;—III, p. 590;—IV, p. 725;—VI, p. 412. Küster, Mart. and Chemn., Pl. XI, f. 12—16. Hanley and Theobald, Conchologia Indica, Pl. XXIV, f. 4.‡

* But a single species *C. Jenmaarensis*, Pfr., has hitherto been obtained in the Ethiopian region. The genus is found throughout the temperate portion of the palaearctic region, in the Malay (or Indo-Malay) province, and in part of the neotropical region.

† The figures in Pl. IX correspond in their numbers with the species, thus: 1, *C. cylindrica*, is fig. 1. 2, *C. Ios*, fig. 2, &c.

‡ The full synonymy being given in Pfeiffer's Monograph, I do not repeat it, but only add references to figures.

Hab.—Western Himalayas from the western frontier of Nipál to the Satlej valley, at elevations from 5000 to 9000 feet.

The figure in the *Conchologia Indica* is that of a specimen which, although adult, has retained its apex. This is a very rare occurrence. The figure now given represents the shell as it is usually found.

Three palatal plaits, the upper elongate, are always present, and beneath them there is occasionally to be found a rudimentary lunella. The characters both of the shell and of the internal plication differ widely from those of typical *Phædusa*, in which sub-genus I do not think that the present species can be included. It stands by itself, and I am inclined to look upon it as the type of a peculiar section.

SECTION II.—?*Medora* H. and A. Adams. Shell fusiform, horny, costulate or smooth, apex not deciduous. Lunule developed, with few, usually two, palatal plicæ above it, the upper elongate.

2. CLAUSILIA IÖS, Benson.

Ann. and Mag. Nat. Hist. 1852, Ser. 2, Vol. X, p. 350. Pfeif. Mon. Hel. III, p. 612; —IV, p. 761; —VI, p. 495. Hanley and Theobald, Conch. Ind., Pl. XXIV, fig. 10.

Hab.—Temperate regions of Sikkim and Bútán, in the Eastern Himalayas, from about 5000 to 9000 feet. It doubtless also exists in Nipál. It is generally met with at the roots of oaks and other large trees.

In this species, as was noticed by Mr. Benson, the lunule is sometimes broken up into short oblique plaits above, and consequently the number of palatal plicæ varies. Sometimes there is only the long lamellar plait above the lunule, in other specimens there are, besides the long one, two short plicæ.

3. CLAUSILIA BACILLUM, Benson.

Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 1, nec Theobald, J. A. S. B., 1858, p. 321.

? *C. ignota*, Theob. J. A. S. B., 1858, Vol. XXVII, p. 321, (descriptio nulla).

Testa subrimata, fusiformis, solidula, glabra, vix striatula, nitidula, superficie sæpe in exemplis veteribus crosea, albido-vel cerco-cornea; spira superne regulariter attenuata; apicæ obtuso, papillari; sutura simplice impressa. Anfr. 9 convexi, ultimus validius striatus, pone aperturam vix compressus; apertura verticalis, piriformi-oblonga, lamella supera validiori, columbellari antice vix conspicua, parum torta, intus subfurcata; lunella distincta, plicis palatalibus 2, suturæ parallelibus, supera elongata, altera brevi, a lunella vix disjuncta. Peristoma continuum, solutum, album, breviter expansum et incrassatum, margine parietali vix sinuato. Long. 15, anfr. penult. diam. 3.5 m.m.; apert. cum peristomate 3.33 longa, 2.33 m.m. lata.

Hab. in montibus Khasi et Nuga dictis, ultra fines meridionales vallis Assamensis. W. Theobald ad Nanchui in montibus Khasi invenit, H. Godwin-Austen haud procul ab Asalu in Cachar septentrionali.

This species is near *C. Ios*, but easily distinguished by the absence of costulate sculpture. I think there can be but little doubt of the identity of the form found by Major Godwin-Austen, from which my figures and description are taken, with the *C. bacillum* of the *Conchologia Indica*, but as only one single figure is given in that work, and there is no description, I may be mistaken. I doubt, however, that this is the *C. bacillum* of Mr. Theobald's paper in the *Journal* for 1858, l. c., because that was said to be of the type of *C. insignis*, which can scarcely be said to be the case with the present species, but as no descriptions were furnished in Mr. Theobald's paper, his names cannot be retained. The name, in the present instance, must be considered as founded on the figure in the *Conchologia Indica*.

4. CLAUSILIA CEYLANICA, Bens.

Ann. and Mag. Nat. Hist., February, 1863, Ser. 3, Vol. XI, p. 89.

Pfeiffer, Mon. Hel. VI, p. 427.

Hab.—The mountains in the southern part of Ceylon.

This shell was first found by Mr. Layard, and has since been obtained by Mr. H. Nevill. I am indebted to Messrs. G. Nevill and Stoliezka for the loan of specimens.

Benson, in his original description, has overlooked the lunule, which is well developed, as in the two preceding species.

5. CLAUSILIA THEOBALDI, sp. nov.

Testa rimata, fusiformi turrata, cornea, confertim flexuose costulata, translucens. Spira turrata, sensim attenuata, lateribus superne subrectis, apice acutiusculo, sutura impressa. Anfr. 11 convexi, antepenultimus et penultimus majores, ultimus juxta suturam tumidiusculus, infra plicam palatalem superam compressus, subtus rotundatus. Apertura vix obliqua, piriformis, lamellis approximatis, mediocribus, supera acuta, infera immersa, lunella distincta, plicis palatalibus 2, supera elongata, altera brevi. Peristoma rectum, expansum, solutum, margine palatali haud sinuato. Long. 22 mm., diam. 3.5; apert. 3.5 mm., longa, 2.6 lata.

Hab.—Tonghu in provincia Barmana. *Detexit* W. Theobald.

This is the only species of the present group hitherto found in Barma.

SECTION III.—*Phædusa*, H. and A. Adams. Shell fusiform, generally rather thick; apex not deciduous. No lunule, palatal plicæ numerous, the uppermost produced nearly to the aperture.

A. Sutures crenulated.

6. CLAUSILIA LOXOSTOMA, Bens.

J. A. S. B., 1836, Vol. V, p. 353. Pfeiffer, Mon. Hel. II, p. 404;—III, p. 590;—IV, p. 725;—VI, p. 411. Hanley and Theobald, *Conch. Ind. Pl. XXIV*, fig. 7.

C. Bengalensis, Von dem Busch, Pfeiffer, *Symb. II.* p. 60.—Küster, *Mart. and Chem.* p. 24, pl. 2, fig. 11-13.

Hab.—Khasi hills, North-east of Bengal, and South of the Assam valley.

The locality usually assigned to this shell, Bengal, conveys a false impression, as neither this nor any other *Clausilia* is found in the plains of India. Teria ghat, the locality mentioned in the *Conchologia Indica*, is at the southern base of the Khasi hills, and the shell is found at many places along the range, from the base up to a height of, I believe, 4000 or 5000 feet. Major Godwin-Austen sent me this species from Habiang on the Khasi plateau. I do not know if *C. loxostoma* occurs also on the northern or Assam flank of the range; I have never seen specimens from any place in that direction, and as the climate is much drier, many of the shells common on the southern watershed are wanting to the north.

The form of this species varies considerably, some specimens being much more fusiform than others. I have figured three varieties, of which figure 6 may be considered as the typical form.

7. *CLAUSILIA FERRUGINEA*, sp. nov.

Testa subrimata, clongato-fusiformis, solida, fere glabra, striatula, haud nitida, sordide et interdum pallide ferruginea; spira alta, lateribus sursum subrectis, apice obtuso papillari, sutura impressa, valde crenulata. Anfr. 11 convexi, ultimus capillaceo-striatus, basi rotundatus. Apertura fere verticalis, subtrapezoidalis, marginibus lateralibus fere parallelis, basali rotundato; lamella supera acuta, sinistrorsim inflexa, columellari mediocri, plicis palatalibus circa 5, supera elongata, haud procul ab apertura desinente, sutura parallela, ceteris magis obliquis curvatisque. Peristoma continuum, album, expansum, parum incrassatum, margine supero repando, leviter sinuato. Long. 30, diam. 5.5 mm.; apert. cum perist. 6.5 longa, 4.66 lata.

Hab.—In montibus Naga dictis, ultra fines meridionales provinciæ Assam, (ditexit Masters).

7a. *Var. tumida, anfractibus ultimis aperturaque majoribus. Long. circa 33, diam. 6.5 mm., apert. 7 longa, 5 lata.*

Hab.—In "North Cachar," (Godwin-Austen).

This fine species, the largest hitherto found in Assam or the Himalayas, resembles *C. loxostoma* in its strongly crenulated sutures and in form, but differs in its larger size and more numerous whorls. It was first found by Mr. Masters in 1860, in the hills south of Golaghât, together with *Spiraculum Mastersi* and other interesting shells. The more tumid variety has lately been obtained in North Cachar by Major Godwin-Austen.

8. *CLAUSILIA ASALUENSIS*, Godwin-Austen, MS.

Testa non rimata, fusiformi-turrita, alba vel pallide castanea, solidula, striata, ad anfractus duos ultimos capillaceo-striata. Spira sensim attenuata lateribus superne concaviusculis, apice obtusiusculo, sutura impressa, confertim

minuteque crenulata. Anfr. 12-13, convexi, antepenultimus maximus, penultimus parum minor, ultimus ad latus compressus, ad basin rotundatus. Apertura subverticalis, piriformis, lamella supera compressa, columellari immersa, lunella nulla, plica palatali supera elongata, suturæ parallela, secunda etiam parallela, mediocri, cæteris obliquis. Peristoma leviter sinuatum, album, incrassatum, continuum, breviter solutum. Long. 23·5, diam. 5 mm.; apert. c. perist. 5 longa, 3·66 lata.

Hab. ad Asalu in North Cachar, ad altitudinem 7000 ped. angl. (Godwin-Austen.)

This species is easily distinguished from both *C. loxostoma* and *C. ferruginea* by its more numerous whorls and finely crenulate sutures. In size it is intermediate between the two, some specimens being as much as 26 mm., or rather more than an inch in length.

B. *Sutures simple.*

9. *CLAUSILIA FUSIFORMIS, W. Blanf.*

J. A. S. B., 1865, Vol. XXXIV, Pt. 2, p. 80. Pfeiffer, Mon. Hel. Vol. VI, p. 410. Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 6.

Hab.—Arakan hills, Barma.

This shell was described from a single immature specimen. Mr. Theobald has since found several adult shells from one of which the figure now given is taken. These differ a little from the type, they are smaller, and the lower whorls are rather more convex. The peristome is thickened, expanded and continuous. The following are the characters of the form now figured.

Testa non rimata, fusiformis, albo-cornea, minute oblique præsertim ad anfractum ultimum costulato striata; spira supra anfr. antepenultimum lente decrescente, versus apicem acutiusculum rapide attenuata; sutura simplice parum impressa, versus apicem profundiore. Anfr. 8-9, superi convexi, cæteri convexiusculi, antepenultimus tumidus, penultimus minor, ultimus ad basin rotundatus. Apertura rotundato-piriformis, parum obliqua, lamella supera mediocri, infera paulum immersa torta; lunella nulla, plica palatali supera longissima, cæteris brevioribus subparallelis, vix obliquis. Peristoma album, incrassatum, expansum, continuum, non solutum, leviter sinuatum. Long. 22·5, diam. 6 mm. Apert. c. perist. 6 mm. longa, 5 lata.

This species closely resembles the next, but appears to be distinguished by having 1 to 2 whorls less, by the apex being less attenuate, and the lower palatal plaits much less oblique. It is quite possible, however, that connecting links may be found, in which case I should be inclined to unite the two.

10. *CLAUSILIA GOULDIANA, Pfr.*

Malakoz. Blätter, 1856, Vol. III, p. 259.—Mon. Hel. IV, p. 724,—VI, p. 409.—Nov. Conch. I, p. 123, Pl. XXXIV, fig. 18—20.

Hab.—Mergui and Mouhmain, Tenasserim provinces, British Barma.

This species was first described by Pfeiffer from Mergui specimens in Mr. Hugh Cuming's collection. It has since been found abundantly by Mr. Theobald near Moulmain. It varies much in colour, some specimens being brown, others rosy pink, others nearly white; the peristome is either pink or white. Some shells from Moulmain are only 22 millemetres long, others are nearly 26.

11. CLAUSILIA INSIGNIS, Gould.

Proc. Bost. Soc. Nat. Hist. Vol. I, p. 140.—Bost. Jour. Nat. Hist. Vol. IV, p. 458, pl. XXIV, fig. 8. Pfeiffer, Mon. Hel. II, p. 423.

Hab.—Tavoy, Tenaserim provinces, Barma.

The figure given is copied from Gould's. I have never seen this species.

12. CLAUSILIA SP.

C. insignis, Pfr. (nec Gould), Mon. Hel. III, p. 589—IV, p. 725.—VI, p. 409.—Nov. Conch. I, p. 122, Pl. XXXIV, fig. 15—17.

C. insignis, Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 2.

Hab.—Tenaserim provinces. *Var. gracilior*, Conch. Ind. Pl. XXIV, fig. 3, is from Moulmain.

The figure now given is copied from that in the *Conchologia Indica*, but reduced to the natural size.

It appears to me evident, either that Gould's figure of *C. insignis* in the Boston Journal is incorrect, or that a different shell has been figured under the same name by Pfeiffer and Hanley. The first is improbable, because the other shells represented on the same plate are excellently figured, and I can only conclude that two forms have been confounded under this name. The *C. insignis* of Pfeiffer and Hanley requires naming, but as I have no specimens, and the system of giving names to figures is highly objectionable, I shall not attempt to supply the deficiency.

The *C. insignis*, *var. gracilior* of the *Conchologia Indica* is probably a variety of the present form. From the references given in the *Conchologia* I am inclined to believe that Mr. Hanley has already noticed the differences between Gould's and Pfeiffer's shells described as *C. insignis*, and that he believes the former to be represented by fig. 2, the latter (his *var. gracilior*) by fig. 3, of Pl. XXIV, of the *Conchologia*. It appears to me, however, that Pfeiffer's figure in the *Novitates Conchologicae* agrees far better with fig. 2, than with fig. 3, and that Gould's original figure in the Boston Journal represents a shell quite distinct from both.

13. CLAUSILIA MONTICOLA, Godwin-Austen. MS.

Testa rimata, exilis, elongata, fusiformi-subulata, solidula, brunnea vel brunnescente-grisea, striata, parum nitida; superficie saepe erosa; spiræ lateribus anticæ rectis, apicem papillarem versus concaviusculis; sutura simplice, impressa. Anfr. 13 convexi, primi 4 fere cylindrici, antepenultimus

vix quam penultimus major, ultimus ad basin rotundatus, haud compressus. Apertura piriformis, fere verticalis, lamella palatali sinistrorsim deflexa, acuta; columellari subprofunda; lunella nulla, plicis palatalibus fere parallelis 6-7, supera valde elongata. Peristoma continuum, vix solutum, leviter sinuatum, superne repandum, expansiusculum, mediocriter incrassatum, album, margine parietali leviter sinuato. Long. 21, diam. anfr. penult. 4 mm.; apert. cum perist. 3.66 longa, 2.66 lata.

Hab.—In montibus Burrail dictis, ad latus meridionale vallis Assamensis, in "North Caehar," ad alt. circa 6500 ped. angl. detexit H. H. Godwin-Austen.

This species is well distinguished from its allies by its slender shape and numerous whorls.

I have a single specimen of a *Clausilia* from the Arakan hills, somewhat similar to *C. monticola*, but with only ten whorls. As it is bleached and the surface in bad condition, I do not describe it.

SECTION IV.—*Oospira*,* *sect. nov.* Shell with but few whorls, usually five or six, and of a peculiar more or less oval form with a very blunt apex. Lunule wanting, palatal plaits as in *Phædusa*. Type *C. Philippiana*, Pfr.

The known shells of this section are solid deeply coloured *Clausilia*, smooth or with very slight sculpture. So far as is hitherto known, the type is peculiar to Martaban and Tenasserim.

14. CLAUSILIA PHILIPPIANA, Pfr.

Zeitschr. f. Malak. 1847, p. 69.—Mon. Hel. II, p. 423;—III, p. 590;—IV, p. 725;—VI, p. 401, Küster, Mart. and Chem. p. 100, Pl. XI, fig. 7—9. Stoliczka, J. A. S. B.; 1871, Vol. XL, Pt. II, p. 174, Pl. VI, fig. 7—10 (lingual teeth, jaw and anatomy).

Hab.—Moulmain. According to Pfeiffer this shell is also found at Mergui, but I have never seen specimens from the latter locality.

15. CLAUSILIA VESPA, Gould.

Proc. Boston Soc. 1859, Vol. VI, p. 12.—Otia Conechologica, p. 220. Pfeiffer, Mon. Hel. VI, p. 409.

Hab.—Tavoy (and Moulmain?).

I have figured a shell from Moulmaiu which may possibly be this form, as it agrees in its measurements with Gould's type; but it is barely separable from *C. Philippiana*. Gould's description is so meagre that, it is very difficult to identify the species, and it has never, so far as I am aware, been figured.

The shell here represented has a most astonishing resemblance to *Clausilia Bartletti*, H. Adams, Proc. Zool. Soc. 1866, p. 441, Pl. XXXVIII, fig. 2, from Peru. We shall presently see that this is not the only instance of resemblance between Barmese and South American *Clausilia*.

* Etym. $\omega\omicron\nu$ an egg and $\sigma\pi\epsilon\iota\rho\alpha$ a spiral.

16. *CLAUSILIA BULBUS*, Bens.

Ann. and Mag. Nat. Hist. 1863, Ser. 3, Vol. XI, p. 321. Pfeiffer, Mon. Hel. VI, p. 409. Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 5.

Hab.—Banks of the river Attaran, near Moulmain. I have never seen this species. The figure in the *Conchologia Indica* is, I believe, taken from Mr. Benson's original specimen; I have therefore given a copy reduced to the natural size.

17. *CLAUSILIA OVATA*, sp. nov.

Testa vix subrimata, elongato-ovata, pupiformis, intense rufo-ferruginea, regulariter confertimque striata; spira tumida, apice convexo, sutura parum impressa. Anfr. 5·5 convexiusculi, primi rapide accrescentes, antepenultimus maximus, penultimus vix minor, ultimus ad basin rotundatus. Apertura auriformis, fere verticalis, juxta unfractum penultimum repanda, lamella supera acuta, antice validiore, fere verticali, infera stricta; lunella nulla, plicis palatalibus 7, supera producta, in fauce aperturae conspicua, suturæ parallela, secunda curvata, cæteris brevibus obliquis. Long. 19, diam. 7 mm. Apert. oblique 6 longa, 4·5 lata.

Hab. Ad Nattoung, juxta ripam Attaran fluminis, haud procul a Moulmain in Barma.

This is a fourth species of this little group. It is more ovate than *C. Philippiana* and *C. vespa*, smaller and less tumid than *C. bulbosus*.

SECTION V.—?*Nenia* H. and A. Adams. Shell elongate, mouth entirely free from the last whorl, and broadly expanded, both the lamellæ of the aperture on the parietal margin and close together, subcolumellar lamina large and not concealed by the columellar, a large lunule and one or two parietal plaits above it.

This group includes one species from British Barma, and one (*C. tuba** Hanley) from the Shan States of Upper Barma, outside of the British territories. It appears to differ from the South American forms which compose the subgenus *Nenia* in the possession of a lunule, but I have no sufficient means of comparison, and in other respects some of the Neotropical forms closely resemble those of Barma.

18. *CLAUSILIA MASONI*, Theob.

J. A. S. B., 1864, Vol. XXXIII, p. 246, Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 8.

Hab.—Near Tonghú in the mountains between Pegu and Martaban.

The lamellæ of the aperture are as above described. Those of *C. tuba* are precisely similar.

* Ann. and Mag. Nat. Hist. May, 1868, Ser. 4, ol. I, p. 343. By mistake, in the *Conchologia Indica*, the Proceedings of the Zoological Society are quoted as the work in which this species was described.